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| APPLICATION NO. | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO. | CONFIRMATION NO. |
|-----------------|-------------|----------------------|---------------------|------------------|
| 09/683,013 | 11/08/2001 | Feng Liang | 200-0994 KAV | 6123 |

500 7590 09/11/2002

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EXAMINER

NGUYEN, TRAN N

ART UNIT PAPER NUMBER

2834

DATE MAILED: 09/11/2002

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/683,018

Applicant(s)

LIANG ET AL.

Examiner

Tran N. Nguyen

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on ____.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☐ Claim(s) 1-15 is/are pending in the application.
- 4a) Of the above claim(s) ____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) ____ is/are allowed.
- 6) ☐ Claim(s) 1-15 is/are rejected.
- 7) ☐ Claim(s) ____ is/are objected to.
- 8) ☐ Claim(s) ____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on ____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on ____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. ____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.
- 14) ☒ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) ____.
- 4) ☐ Interview Summary (PTO-413) Paper No(s). ____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____.

DETAILED ACTION

Double Patenting

The nonstatutory double patenting rejection is based on a judicially created doctrine grounded in public policy (a policy reflected in the statute) so as to prevent the unjustified or improper timewise extension of the "right to exclude" granted by a patent and to prevent possible harassment by multiple assignees. See *In re Goodman*, 11 F.3d 1046, 29 USPQ2d 2010 (Fed. Cir. 1993); *In re Longi*, 759 F.2d 887, 225 USPQ 645 (Fed. Cir. 1985); *In re Van Ornum*, 686 F.2d 937, 214 USPQ 761 (CCPA 1982); *In re Vogel*, 422 F.2d 438, 164 USPQ 619 (CCPA 1970); and, *In re Thorington*, 418 F.2d 528, 163 USPQ 644 (CCPA 1969).

A timely filed terminal disclaimer in compliance with 37 CFR 1.321(c) may be used to overcome an actual or provisional rejection based on a nonstatutory double patenting ground provided the conflicting application or patent is shown to be commonly owned with this application. See 37 CFR 1.130(b).

Effective January 1, 1994, a registered attorney or agent of record may sign a terminal disclaimer. A terminal disclaimer signed by the assignee must fully comply with 37 CFR 3.73(b).

1. **Claims 1-4, 6-7 and 12-13** are rejected under the judicially created doctrine of *obviousness-type double patenting* as being unpatentable over claims 1-8 of U.S. Patent 6445095 (hereafter US'095) to Liang et al, in view of Filhol (US 3688137).

US'095 substantially discloses the claimed invention, particularly the thermal conductive ring is made of aluminum having higher thermal conductivity than that of the flexible potting material. However, US'095 *differs* from the claimed invention in only one respect: the thermal conductor ring is a non-laminated ring, instead of a laminated one.

Filhol, however, teaches an electric machine having a stator core and the stator winding end-turns being potted with a resin (4), and a solid thermal conductor element (6) having (6a) as ring portion located between the potted stator core winding's end-turns and the housing for conducting heat from the stator core to the housing. This enables the solid thermal conductive structure (6), and particularly solid thermal conductive ring portion (6a), functions as heat conducting element between the stator winding end-turns and the housing.

The test for obviousness is not whether the features of a secondary reference may be bodily incorporated into the structure of the primary reference; nor is it that the claimed invention must be expressly suggested in any one or all of the references. Rather, the test is what the combined

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teachings of the references would have suggested to those of ordinary skill in the art. See *In re Keller*, 642 F.2d 413, 208 USPQ 871 (CCPA 1981). In this instant case, those skilled in the art would realize that Filhol's important teaching is by forming a solid structure that is made of a selected material that has high thermal conductivity, one would provide the electrical machine with a thermal conductive structure that would effectively conduct the heat from the stator core and the stator winding to the housing thereof.

Hence, it would have been obvious to one skilled in the art at the time the invention was made to modify the US'095 machine by configuring the thermal conductive ring as a solid structure, as taught by Filhol. Doing so would enable the thermal conductive structure to effectively conduct the heat from the stator core and the stator winding to the housing thereof.

2. **Claims 1-4, 6-7 and 12-13** are rejected under the judicially created doctrine of *obviousness-type double patenting* as being unpatentable over claims 1-8 of U.S. Patent 6445095 (hereafter US'095) to Liang et al, in view of Fakler et al (US 5053658).

US'095 substantially discloses the claimed invention, particularly the thermal conductive ring is made of aluminum having higher thermal conductivity than that of the flexible potting material. However, US'095 *differs* from the claimed invention in only one respect: the thermal conductor ring is a non-laminated ring, instead of a laminated one, as in US'095.

Fakler, however, teaches an electric machine having a stator core and the stator winding end-turns, and a solid thermal conductor element (28) located between the potted stator core winding's end-turns and the housing for conducting heat from the stator core to the housing. Therefore the heat generated in the winding heads reaches the metal-die-cast-alloy conductive element (28) almost immediately transferred through the outer surface of the stator housing. Fakler teaches that this would provide an electrical machine in which the heat withdrawal from the winding heads, i.e., winding end-turns, outwardly is further improved in a cost-favorable manner by the solid metal-die-cast-alloy conductive element (28) that has high heat conductive value.

Again, the test for obviousness is not whether the features of a secondary reference may be bodily incorporated into the structure of the primary reference; nor is it that the claimed

invention must be expressly suggested in any one or all of the references. Rather, the test is what the combined teachings of the references would have suggested to those of ordinary skill in the art. See *In re Keller*, 642 F.2d 413, 208 USPQ 871 (CCPA 1981). In this instant case, those skilled in the art would realize that Fakler's important teaching is by forming a solid thermal conductive structure that has high thermal conductivity, one would provide the electrical machine with a thermal conductive structure that would effectively conduct the heat from the stator core and the stator winding to the housing thereof.

Hence, it would have been obvious to one skilled in the art at the time the invention was made to modify the US'095 machine by configuring the thermal conductive ring as a solid structure that made of metallic alloy, as taught by Fakler. Doing so would enable the thermal conductive structure to effectively conduct the heat from the stator core and the stator winding to the housing thereof.

3. **Claims 5, 7-8, 9-11 and 14-15** are rejected under the judicially created doctrine of *obviousness-type double patenting* as being unpatentable over claims 1-8 of U.S. Patent 6445095 and Filhol (or Fakler), as applied in the rejections against the base claims, and further in view of level of ordinary skills in the art.

The combinations of prior-art ref and claims 1-8 of U.S. Patent 6445095, as applied in the sections 1-3 herein, discloses the claimed invention, except for the added limitations of material of the thermal conductor ring, as recited in claims 10-11, or the material of the potting material, as recited in claims 14-15, or the housing being either pressed fit or shrink fitted against the outer face of the thermal conductor ring, as in claims 8-9.

US'095 claimed the thermal conductive ring is aluminum, while Filhol teaches discloses different materials such as metallic and non-metallic material for the thermal conductive element and various resin materials for the potting material. Thus, those skills in the art would realize that selecting a suitable material for the component requires only level of ordinary skills in the art.

It would have been obvious to one skilled in the art at the time the invention was made to modify the US'095 by selecting respective suitable materials for the thermal conductive ring and

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the potting material, since it has been held to be within the general skill of a worker in the art to select a known material on the basis of its suitability for the intended use as a matter of obvious design choice. *In re Leshin*, 125 USPQ 416.

Regarding the limitations of the housing being pressed fitted or shrink fitted against the outer face of the thermal conductor ring, the machine of US'095 in view of Filhol having stator and housing being attached by thermosetting resin, as potting material, through the process of thermally setting of the thermosetting fluid resin. Both US'095 and Filhol discloses the thermal conductive ring being placed between the stator core and the housing, and these components are potted and attached to the housing by fitting these components' outer face against the housing. Whether it is pressed fitting or shrink fitting is a matter of obvious engineering design choice based upon a suitable method of mechanical abutment. An artisan would have necessary mechanical skills and knowledge to determine a suitable mechanical attachment method.

Thus, would have been obvious to one skilled in the art at the time the invention was made to select a suitable fitting process of either press fitting or shrink fitting the thermal conductive ring's outer face to the housing because either method of attachment would increase part counts of the machine and an artisan would have the necessary skills to determine a suitable fitting process.

4. **Claims 1-15** are rejected under the judicially created doctrine of obviousness-type double patenting as being unpatentable over claims 1-8 of U.S. Patent 6445095 (hereafter US'095) to Liang et al, in view of level of ordinary skills in the art.

US'095 substantially discloses the claimed invention, particularly the thermal conductive ring is made of aluminum having higher thermal conductivity than that of the flexible potting material. However, US'095 *differs* from the claimed invention in only one respect: the thermal conductor ring is a non-laminated ring, instead of a laminated one.

Those skilled in the art would understand that the laminated conductive ring in US'095 is an electrical conductive laminated structure that possibly has more leakage inductance effect but less eddy-current effect, while a solid electrical conductive structure as in present invention,

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would reversibly have less leakage inductance effect but more eddy-current effect. More leakage inductance is objectable in an induction motor because it weakens the motor torque output. On the other hand, eddy-current is objectable because it generates more heat, in addition to the heat generated by the stator and its winding. Thus, selecting a laminated thermal conductive ring or a solid thermal conductive ring is a matter of obvious engineering design choice based upon a particular industrial application of the electrical machine with an objection of increasing output torque by reducing leakage inductance or increasing the efficiency of the thermal conductivity of the thermal conductive ring by avoiding heat-generated eddy current therein.

Hence, it would have been obvious to one skilled in the art at the time the invention was made to modify the US'095 machine by configuring the thermal conductive ring as a solid structure because this would preventing the inductance leakage therein.

Regarding various type of material for fabricating the thermal conductive ring, or various potting material for the stator those skills in the art would realize that selecting a suitable material for the component requires only level of ordinary skills in the art.

Thus, it would have been obvious to one skilled in the art at the time the invention was made to modify the US'095 by selecting respective suitable materials for the thermal conductive ring and the potting material, since it has been held to be within the general skill of a worker in the art to select a known material on the basis of its suitability for the intended use as a matter of obvious design choice. *In re Leshin*, 125 USPQ 416.

Regarding the limitations of the housing being shrink fitted against the outer face of the thermal conductor ring, whether it is pressed fitting or shrink fitting is a matter of obvious engineering design choice based upon a suitable method of mechanical abutment. An artisan would have necessary mechanical skills and knowledge to determine a suitable mechanical attachment method.

Thus, would have been obvious to one skilled in the art at the time the invention was made to select a suitable fitting process of either press fitting or shrink fitting the thermal conductive ring's outer face to the housing because either method of attachment would increase part counts of the machine and an artisan would have the necessary skills to determine a suitable fitting process.

Communication

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Tran N Nguyen whose telephone number is (703) 308-1639. The examiner can normally be reached on M-F 6:00AM-2:30PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Nestor Ramirez can be reached on (703)-308-1371. The fax phone numbers for the organization where this application or proceeding is assigned are (703)305-3431 for regular communications and (703)-395-3432 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703)-308-1782.

A handwritten signature in black ink, appearing to read 'Tran Nguyen', is written over the printed name.

TRAN NGUYEN

PRIMARY PATENT EXAMINER

TC-2800